**Game Thinking Planning Template**

# Lesson outcomes

Year 11 chemistry, module 8.3.4 (all dot points relating to stoichiometry/mole calculations) and 8.4.4 (solution calculations)

# Description of your audience

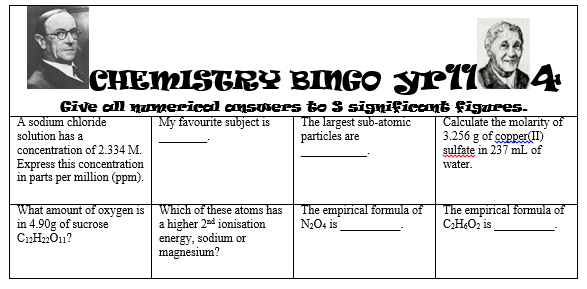
Around 16-17 years old. Even though maths in chemistry is simple, because it is applied maths the students struggle with it. It usually takes quite a while for them to wrap their heads around the concepts, gain confidence and look at mole calculations in a positive light. They like games or anything that seems fun and absolutely hate being handed a page full of classic, cut-and-dried mole problems.

# Time constraints

We are pushed for time, so it is not realistic to spend more than one lesson on “game-style” activities per fortnight. One lesson = 50 minutes.

# Game Elements

This game is old-school Bingo re-invented for mole calculations. Students may play individually or in teams. They get 25 minutes to solve the problems on the card to 3 significant figures then I call out the answers only. Hilariously, the first time we play no-one wins because they have stuffed up at least one calculation….although I seem to be the only one that finds that funny. The cards look like variations on this one; there are 23 different cards:



Game dynamics:

Constraints in that there is only one right answer

No narrative

There is progression in terms of providing different versions of different difficulty level (which they can’t access till mastering the previous level)

Emotion…..they seem to get extremely emotional about it!

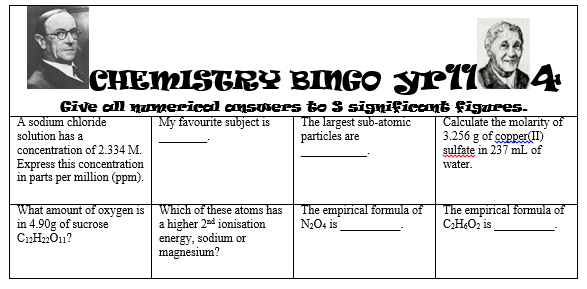
Relationships: vital as they help each other to complete the cards and peer-teach where necessary

Game mechanics present:

Challenges, chance (in terms of what card they get), co-operation, rewards (points, prizes), win states and feedback (I show them how to get right answer at end)

Game components:

Achievements, badges (highest point scorer = Mole Queen), content unlocking, leaderboards, levels, points, teams



# Fun check

Hard fun: Obvious challenge, reward and accomplishment

Easy fun: Definitely have the joy of figuring out a problem but not really to be creative

Serious fun: They appeared to find it very exciting and stimulating, but also a bit traumatic

Social fun: Clear need to co-operate and better students got the opportunity to lead through peer-teaching